- 1 -

SEQUENCE LISTING

<110> COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION

<120> NOVEL GENETIC SEQUENCES ENCODING STEROID AND JUVENILE HORMONE

5 RECEPTOR POLYPEPTIDES AND INSECTICIDAL MODALITIES THEREFOR II

<130> p:\oper\\dro\ecdysone.cip

<140> US continuation-in-part of PCT/AU99/00033

<141> 1999-07-02

<150> PCT/AU/00033 10

<151> 1999-01-15

<150> AU PP1536

<151> 1998-01-15

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<170> PatentIn Ver. 2.0

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at	g tt	a ga	a ga	a tc	c to	t to	a ga	a gta	a ac	c to	e ta	t ca	aat	ggt	ctg	96
Met	t Le	u Gl	u Gl	u Se:	r Sei	. Sei	: Gl	νa)	l Th:	r Se	r Ser	Sez	Asn	Gl _y	/ Leu	
			20	9				29	5				30)		
gto	ttg	g tea	a tog	gat	t ata	aat	atg	, tca	. cct	t c	tcg	ttg	gat	tæ	dec	144
Val	Lev	ı Ser	Ser	. Asi	Ile	Asn	Met	Sez	Pro	Ser	: Ser	Leu	Asp	Ser	Pro	
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Val			Asp	Gln	Glu	Met	Trp	Leu	Сув	Asn	qeA ı	Ser	Ala	Ser	Tyr	
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											caa					336
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aat	aat	tee	250	226	200			1-								
											aca					384
,		115		ADII	Int	ASI		ser	Val	Asn	Thr		Asn	Ser	Val	
							120					125				
gga	gg a	aa+	ach ⇒	~~ +												
											atg					432
1	 y	JIY	GTÅ	GTA	GTA	стй	ωŢХ	val	Pro	Gly	Met	Thr	Ser	Leu	Asn	

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99 E	ctg	ggt	ggt	ggt	ggt	ggc	agt	¢aa	gtg	aat	aat	cac	aat	cac	agc	480
Gly	Leu	Gly	Gly	Gly	Glγ	Gly	Ser	Gln	Val	Asn	Asn	His	Asn	His	Ser	
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Ser	His	His	Thr	Asn	Gly	His	Meţ	Gly	Ile	Gly	Gly	Gly	Gly	Gly	Gly	
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Leu	Ser		Aşn	Ile	Asn	Gly	Pro	naA	Ile	Val	Ser	Asn	Ala	Gln	Gln	
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Leu		Ser	Leu	Gln	Ala	Ser	Gln	Asn	Gly	Gln	Val	Ile	His	Ala	Asn	
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-4-

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Cys	Lys	Phe		His	Ala	CĀa	Glu	Met	Asp	Met	Tyr	Met	Arg	Arg	Lys	
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Glu Cys Val Val Pro Glu Asn Gln Cys Ala Met Lys Arg Arg Glu Lys

380

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- 5 -

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	гув	Arg	TTÉ	wet		ser	PTO	Asp	GIU		Glu	Ser	Gln	His	_	
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214	ser	File	Arg		116	Inc	GIU	ııe		116	Leu	Thr	val	Gln	Leu	
				485					490					495		
a t +	ata	g a a		acc	224	ac.	++~	cc.	~		200				caa	
														Pro		1536
		Jiu	EME	~.4	₽y ⊃	GTÅ	T-G IT	FIG	WTSI	FIIG	TUL,	гÀЗ	тте	rro	GTD	

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-6-

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Glu	ı Asp	Gln	Ile	Thr	Leu	Leu	Lys	Ala	Сув	Ser	Ser	Glu	val	Met	Met	
		515	į				520					525	3			
ttg	r. cga	atq	qca	. cga	cat	tac	gat	CAC	aat	tca	gat	tea	. = + =	++	ttt	1632
															Phe	1032
	530		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		, rr 9			NIS	ASII	эег		sei	116	Pne	Fue	
	530					535					540					
cc	aat	aat	cga	tcg	tat :	scā	cgt	gac	tct	tat	aaa	atg	gct	ggc	atg	1680
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Ala	Asp	Asn	Ile	Glu	Asp	Leu	Leu	His	Phe	Сув	Arg	Gln	Met	Tyr	Ser	
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ato	222	ata	79 6	225	at c	~ >>										_
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Mec	гÃв	Val		Asn	νaΊ	Glu	Tyr	Ala	Leu	Leu	Thr	Ala	Ile	Val	Ile	
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Phe	Ser	Asp	Arg	Pro	Gly	Leu	Glu	Glu	Ala	Glu	Leu	Val	Glu	Ala	Ile	
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Caa	agt	tac	tac	atc	gat	aca	ctc	යුදුය	att	tac	ata	ctt	aat	cac	cat	1872
		Тут														20,2
	610	-	•		- -			5		-71		neu.	UDII	arg	UTB	
	u					615					620					
tgc	ggc	gat	¢¢¢	atg	agt	ctc	gta	ttc	ttt	gc¢	aag	ctt	ctg	tca	att	1920

Cys Gly Asp Pro Met Ser Leu Val Phe Phe Ala Lys Leu Leu Ser Ile

635

640

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-7-

cta acc gaa ctg cgt acg ttg ggc aat caa aat gcc gaa atg tgt ttc Leu Thr Glu Leu Arg Thr Leu Gly Asn Gln Asn Ala Glu Met Cys Phe 655 650 645 tog ttg aaa ttg aaa aat ogo aaa ctg coa aaa tto cto gaa gag ato Ser Leu Lys Leu Lys Asn Arg Lys Leu Pro Lys Phe Leu Glu Glu Ile 665 670 660 tgg gat gta cat gcc att cca ccc tca gtg cag tca cac ata cag gct 2064 Trp Asp Val His Ala Ile Pro Pro Ser Val Gln Ser His Ile Gln Ala 675 680 685 acc cag gcg gaa aag gcc gcc cag gaa gct cag gca aca aca tcg gcc 2112 Thr Gln Ala Glu Lys Ala Ala Gln Glu Ala Gln Ala Thr Thr Ser Ala 690 695 700 att tea gea gee gee ace tea tet tee tee ata aat ace teg atg gea 21,60 Ile Ser Ala Ala Ala Thr Ser Ser Ser Ser Ile Asn Thr Ser Met Ala 705 710 715 720 aca too too too too too too too goo goo too aca coc aat 2208 Thr Ser Ser Ser Ser Leu Ser Pro Ser Ala Ala Ser Thr Pro Asn 725 730 735 ggt ggt gcc gtc gat tat gtt ggc acc gat atg agt atg agt tta gta 2256 Gly Gly Ala Val Asp Tyr Val Gly Thr Asp Met Ser Met Ser Leu Val 740 745 750

caa tcg gat aat gca tag

2274

. 30 Gln Ser Asp Asn Ala

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-8-

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<212> PRT

<213> Lucilia cuprina

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Val Tyr Gly Asp Gln Glu Met Trp Leu Cys Asn Asp Ser Ala Ser Tyr

Asn Asn Ser His Gln His Ser Val Ile Thr Ser Leu Gln Gly Cys Thr

Ser Ser Leu Pro Ala Gln Thr Thr Ile Ile Pro Leu Ser Ala Leu Pro

Asn Ser Asn Asn Ala Ser Leu Asn Asn Gln Asn Gln Asn Tyr Gln Asn

Gly Asn Ser Met Asn Thr Asn Leu Ser Val Asn Thr Asn Asn Ser Val

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-9-

Gly	Val	Pro	Gly	Met	Thr	Ser	Leu	Asn							
	130					135					140				

Gly Leu Gly Gly Gly Gly Ser Gln Val Asn Asn His Asn His Ser 5 145 150 150 155

His Asn His Leu His His Asn Ser Asn Ser Asn His Ser Asn Ser Ser 165

10 Ser His His Thr Asn Gly His Met Gly Ile Gly Gly Gly Gly Gly Gly 180 185 190

Leu Ser Val Asn Ile Asn Gly Pro Asn Ile Val Ser Asn Ala Gln Gln
195 200 205

15

Leu Asn Ser Leu Gln Ala Ser Gln Asn Gly Gln Val Ile His Ala Asn 210 215 220

Ile Gly Ile His Ser Ile Ile Ser Asn Gly Leu Asn His His His His 20 225 230 235 240

His His Met Asn Asn Ser Ser Met Met His His Thr Pro Arg Ser Glu

25 Ser Ala Asn Ser Ile Ser Ser Gly Arg Asp Asp Leu Ser Pro Ser Ser
260 265 270

Ser Leu Asn Gly Phe Ser Thr Ser Asp Ala Ser Asp Val Lys Lys Ile 275 280 285

30

Lys Lys Gly Pro Ala Pro Arg Leu Gln Glu Glu Leu Cys Leu Val Cys

- 10 -

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Cys Lys Gly Phe Phe Arg Arg Ser Val Thr Lys Asn Ala Val Tyr Cys

Cys Lys Phe Gly His Ala Cys Glu Met Asp Met Tyr Met Arg Arg Lys

Cys Gln Glu Cys Arg Leu Lys Lys Cys Leu Ala Val Gly Met Arg Pro

Glu Cys Val Val Pro Glu Asn Gln Cys Ala Met Lys Arg Arg Glu Lys

Lys Ala Gln Lys Glu Lys Asp Lys Ile Gln Thr Ser Val Cys Ala Thr

Glu Ile Lys Lys Glu Ile Leu Asp Leu Met Thr Cys Glu Pro Pro Ser

His Pro Thr Cys Pro Leu Leu Pro Glu Asp Ile Leu Ala Lys Cys Gln

Ala Arg Asn Ile Pro Pro Leu Ser Tyr Asn Gln Leu Ala Val Ile Tyr

Lys Leu Ile Trp Tyr Gln Asp Gly Tyr Glu Gln Pro Ser Glu Glu Asp

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- 11 -

Leu Lys Arg Ile Met Ser Ser Pro Asp Glu Asn Glu Ser Gln His Asp
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Ala Ser Phe Arg His Ile Thr Glu Ile Thr Ile Leu Thr Val Gln Leu

5 485 490 495

Ile Val Glu Phe Ala Lys Gly Lcu Pro Ala Phe Thr Lys Ile Pro Gln
500 505 510

Glu Asp Gln Ile Thr Leu Leu Lys Ala Cys Ser Ser Glu Val Met Met
515 520 525

Leu Arg Met Ala Arg Arg Tyr Asp His Asn Ser Asp Ser Ile Phe Phe

15 530 535 540

Ala Asn Asn Arg Ser Tyr Thr Arg Asp Ser Tyr Lys Met Ala Gly Met
545 550 555 560

20 Ala Asp Asn Ile Glu Asp Leu Leu His Phe Cys Arg Gln Met Tyr Ser
565 570 575

Met Lys Val Asp Asn Val Glu Tyr Ala Leu Leu Thr Ala Ile Val Ile . 580 585 590

Phe Ser Asp Arg Pro Gly Leu Glu Glu Ala Glu Leu Val Glu Ala Ile
595 600 605

Gln Ser Tyr Tyr Ile Asp Thr Leu Arg Ile Tyr Ile Leu Asn Arg His

30 610 615 620

- 12 -

Cys Gly Asp Pro Met Ser Leu Val Phe Phe Ala Lys Leu Leu Ser Ile 625

Leu Thr Glu Leu Arg Thr Leu Gly Asn'Gln Asn Ala Glu Met Cys Phe

Ser Leu Lys Leu Lys Asn Arg Lys Leu Pro Lys Phe Leu Glu Glu Ile

10 Trp Asp Val His Ala Ile Pro Pro Ser Val Gln Ser His Ile Gln Ala
675 680 685

Thr Gln Ala Glu Lys Ala Ala Gln Glu Ala Gln Ala Thr Thr Ser Ala

15

5

The Ser Ala Ala Ala Thr Ser Ser Ser Ser Ile Asn Thr Ser Met Ala
705 710 715 720

Thr Ser Ser Ser Ser Leu Ser Pro Ser Ala Ala Ser Thr Pro Asn

725
730
735

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15	C:	cg c	ag ga	ag a	ta aa	g co	ca ga	ac a	tt to	a c	ta c	tc aa	ıt ga	a aa	it az	at ac	96
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20	5€	r Se	2	r Se 5	r Pr	o Ly	8 Pr	0 G1	y Se	r Pr	o As	n Pr	o Ph	e Al	a Il	e Gl	, 134 (
30									.0				4 !				
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35	Le	u G1 5		a Il	e Ası	n Ala	≠ va	T AT	a Al	a Al	a As	n Al	a Ası	l Ası	ı Gl	a aat n Asn	: 192 :
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40	ca.	a at	g tt	у са	a act	acq	; cc:	a cc	a caa	a cad	Z Cad	7 (3)				a aat	
			t Le	u Glı	n Thr	Thi	Pro	Pro	o Gla	ı Glı	ı Glı	n Glr	Tyr	Pro	Pro	a aat > Asn	240
45	6	5			•	70)				7!		-			80	
	cad	2 000	ctt	agt	ggt	tee	. aaa	l car	- ++-							: cgc	
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	tte	++-	222														
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- 14 -

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10					165					170				_	175		
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	39¢	gct	ggc	ggt	gg¢	gga	gga	ggt	ggt	ggt	33 3	gta	agc	aat	gtg	gtt	576
15	Gly	Ala	Gly	_	Gly	Gly	Gly	Gly	Gly	Gly	Gly	Val	Ser	Asn	Val	Val	
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20																	
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7.5	225					230					235					240	
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	Gln	His	Asp	Tyr		ĠĮĀ	Ala	٧al	Ser		Leu	Сув	Gln	Met	Val	Asn	
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tto tog tat cat ego aat agt got att aag goo aat gtt gtt toa att Phe Ser Tyr His Arg Asn Ser Ala Ile Lys Ala Asn Val Val Ser Ile 5 340 345 350 tte gat egt ate ete teg gag ttg age ate aaa atg aaa egt ett aac 10 Phe Asp Arg Ile Leu Ser Glu Leu Ser Ile Lys Met Lys Arg Leu Asn 355 360 15 atc gat ege teg gag tig teg tgt etg aag gea atc ata etc tte aat Ile Asp Arg Ser Glu Leu Ser Cys Leu Lys Ala Ile Ile Leu Phe Asn 20 370 375 380 25 cca gac ata cgc ggt ctg aaa tgt cga gcc gac gtc gag gta tgt cgt 1200 Pro Asp Ile Arg Gly Leu Lys Cys Arg Ala Asp Val Glu Val Cys Arg 385 390 30 395 gaa aaa atc tat gcc tgt ctg gac gaa cac tgo cgc aca gaa cat cca Glu Lys Ile Tyr Ala Cys Leu Asp Glu His Cys Arg Thr Glu His Pro 1248 35 405 410 40 ggt gat gat ggc cgc ttt gct cag cta cta cta agg ttg ccc gca ttg Gly Asp Asp Gly Arg Phe Ala Gln Leu Leu Leu Arg Leu Pro Ala Leu 45 420 425 cgt tee ate agt ete aaa tgt ete gat eat ttg ttt tte tte egt tta 50 Arg Ser Ile Ser Leu Lys Cys Leu Asp His Leu Phe Phe Phe Arg Leu 435 440 55 ata ggc gaa aga gca ttg gag gaa tta att gct gag caa ttg gaa gct Ile Gly Glu Arg Ala Leu Glu Glu Leu Ile Ala Glu Gln Leu Glu Ala 60 450 455 460 65 cct atc tgc 1401 Pro Ile Cys 465 70 75 <210> 4 <211> 467 <212> PRT 80 <213> Lucillia cuprina 85 <400> 4 Met Asp Asn Gly Glu Gln Asp Ala Gly Phe Arg Leu Ala Pro Met Ser 90

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5	5													30		
10	ser	Ser	7 73 3		Pro	Lys	Pro	Gly 40		Pro	Asn	Pro	Phe 45	Ala	Ile	Gly
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35 40	Phe	Phe	Lys 115	Arg	Thr	Val	Arg	Lys 120	Asp	Leu	Thr	Tyr	Ala 125	Сув	Arg	Glu
45	Asp	Arg 130	Asn	Суз	Île	Ile	Аєр 135	Lys	Arg	Gln	Arg	Asn 140	Arg	Cys	Gln	Tyr
50	С у в 145	Arg	Tyr	Gln	Lys	Cys 150	Геп	Ala	Суэ	Gly	Met 155	Lys	Arg	Glu	Ala	Val 160
55	Gln	Glu	Glu	Arg	Gln 165	Arg	Gly	Thr	Arg	Ala 170	Ala	Asn	Ala	Arg	Ala 175	Ala
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65 70	Gly	Ala	Gly 195	Gly	Glu	Asp	Phe	Lys 200	Pro	Ser	Ser	Ser	Leu 205	Arg	Авр	Leu
75	Thr	Ile 210	Glu	Arg	Ile		Glu 2 1 5	Ala	Glu	Gln	Lys	Ala 220		Ser	Leu	Ser
80	Gly 225	Asp	Asn	Val		Pro 230	Phe	Leu	Arg	Val	Gly 235	Asn	Asn	Ser		Val 240
85	Gln	His	Asp	Tyr	Lys 245	Gly	Ala	Val		His 250	Leu	Сув	Gln		Val 255	Asn
90	Lys	Gln	Leu	туг	Gln	Met	Val	Glu	Tyr	Ala	Arg	Arg	Thr	Pro	His	Phe

- 17 -

260 265 270

5	Thi	Hi:	s Let 275	Glr	n Arg	Glu	Asp	Glr 280		. Leu	ı Lev	1 Leu	Lys 285		a Gly	ттр
10	Asr	Glu 290	ı Lev	. Lev	ı Ile	Ala	Asr 295		. Ala	. Ттр	Cys	Ser		Glu	. Ser	Leu
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30	Phe	Ser	туг	His 340	Arg	Asn	Ser	Ala	Ile 345	Lys	Ala	Asn	Val	Val 350	Ser	Ile
35	Phe	Asp	Arg 355	Ile	Leu	Ser	Glu	Leu 360	Ser	Ile	Lys	Met	Lys 365	Arg	Leu	Asn
40	Ile	Asp 370	Arg	Ser	Glu	Leu		Сув	Leu	Lys	Ala	Ile	Ile	Leu	Phe	Asn
45		3 / U					375					380				
	Pro	Asp	Ile	Arg	Gly	Leu	Lys	Cys	Arg	Ala	Asp	Val	Glu	Val	Ċva	Ara
50	385					390					395					400
55	Glu	Ľys	Ile	Tyr	Ala 405	Cys	Leu	Авр	Glu	His 410	Сув	Arg	Thr	Glu	His 415	Pro
60	Gly	Asp	Asp	Gly 420	Arg	Phe	Ala	Gln	Leu 425	Leu	Lеџ	Arg	Leu	Pro 430	Ala	Leu
65	Arg	Ser	Ile 435	Ser	Leu	Lys	Cys	Leu 440	Asp	His	Leu		Phe 445	Phe	Arg	Leu
70	Ile	Gly 450	Glu	Arg	Ala		Glu 455	Glu	Leu	Ile			Gln	Leu	Glu	Ala
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- 18 -

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<212> DNA

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Leu Ile Leu Ile Phe Leu Leu Phe Leu Trp Arg Leu Leu Ala Phe
20 25 30

cgg ttc ttg ttt ata tct gaa caa cca cct ccc gaa gag ctg tgc ctg 144

20 Arg Phe Leu Phe Ile Ser Glu Gln Pro Pro Pro Glu Glu Leu Cys Leu

35 40 45

9tg tgt ggc gac cgg tcg tcc ggt tac cat tac aac gct ctc aca tgc 192

Val Cys Gly Asp Arg Ser Ser Gly Tyr His Tyr Asn Ala Leu Thr Cys

50 55 60

gaa gga tgc aag ggg ttc ttc cgg agg agc atc acc aag aac gcc gtg 240 Glu Gly Cys Lys Gly Phe Phe Arg Arg Ser Ile Thr Lys Asn Ala Val 65 70 75 80

tac cag tgc aag tac ggc aac aat tgc gaa atc gac atg tac atg agg

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- 19 -

Tyr	Gln	Cys	Lys	Туг	Gly	Asn	Asn	Сув	Glu	Ile	Asp	Met	Tyr	Met	Arg
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	-99	aag	cyc	Cag	949	Lyc	câã	cca	aaa	aaa	cgc	ctg	acc	gtc	ggc	atg	336
5	Arg	гå	Сув	Gln	Glu	Сув	Arg	Leu	Lys	Lys	Суэ	Leu	Thr	Val	Gly	Met	
				100					105					110			

agg	cct	gaa	tgt	gtt	gta	cct	gaa	gtt	caa	tgc	gca	gta	aaa	aga	aag	384
Arg	Pro	Glu	Сув	Val	Val	Pro	Glu	Val	Gln	Суз	Ala	Val	ГÀЗ	Arg	Lys	
		115					120					125				

gag	aaa	aaa	gct	caa	cga	gaa	aaa	gat	aaa	cca	aat	tet	act	aca	gac.	432
Glu	Lys	Lys	Ala	Gln	Arg	Glu	Lys	Asp	Lys	Pro	Asn	Ser	Thr	Thr	Asp	
	130					135					140					

att tet eet gaa ata ata aaa ata gaa eet aca gag atg aag att gaa 480 Ile Ser Pro Glu Ile Ile Lys Ile Glu Pro Thr Glu Met Lys Ile Glu 145 - 150 - 155 - 160

20 tgt ggt gaa cca atg ata atg gge aca cet atg ccg act gta cet tac 528

Cys Gly Glu Pro Met Ile Met Gly Thr Pro Met Pro Thr Val Pro Tyr

165 170 175

gtg aaa cct ttg agt tct ctc gtg ccg aat tcg gca cga gtc acg ggt 576

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180 185 190

tac aaa ttt
585
Tyr Lys Phe

- 20 -

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<211> 195

<212> PRT

5 <213> Myzus persicae

<400> 6

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20 25 30

Arg Phe Leu Phe Ile Ser Glu Gln Pro Pro Pro Glu Glu Leu Cys Leu

15 35 40 45

Val Cys Gly Asp Arg Ser Ser Gly Tyr His Tyr Asn Ala Leu Thr Cys

50 55 60

20 Glu Gly Cys Lys Gly Phe Phe Arg Arg Ser Ile Thr Lys Asn Ala Val

65 70 75 80

Tyr Gln Cys Lys Tyr Gly Asn Asn Cys Glu Ile Asp Met Tyr Met Arg

8**5** 90 95

25

Arg Lys Cys Gln Glu Cys Arg Leu Lys Lys Cys Leu Thr Val Gly Met

100 105 110

Arg Pro Glu Cys Val Val Pro Glu Val Gln Cys Ala Val Lys Arg Lys

30 115 120 125

-21 -

Glu Lys Lys Ala Gln Arg Glu Lys Asp Lys Pro Asn Ser Thr Thr Asp 140 130 135

Ile Ser Pro Glu Ile Ile Lys Ile Glu Pro Thr Glu Met Lys Ile Glu 155 160 150 145

Cys Gly Glu Pro Met Ile Met Gly Thr Pro Met Pro Thr Val Pro Tyr 175 170 165

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Tyr Lys Phe

195

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<213> Myzus persicae

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taaatttggt catgootgog aaatggacat gtatatgoga cgtaaatgto aggaatgtag 180

208 gctgaaaaaa tgtttggctg tgggcatg

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35 <213> Myzus persicae

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75

65

P:\OPER\MRO\ECDYSONE.CIP - 1/1/9

- 22 -

agcacaaaaa gagaaggata aaatacagac cagtgtgtgt gcaacggaaa ttaaaaagga 120 aatactcgat ttaatgacat gtgaaccgcc atcacatcca acgtgtccgc tgttacctga 180 5 agacattitg gctaaatgtc aagctcgtaa tatacctcct ttatcgtaca atcaattggc 240 agttatatat aaattaatat ggtatcaaga tggctacgaa cagccatccg aggaagatct 300 caaacgtata atgagttcac ccgatgaaaa tgaaagtcaa cacgatgcat catttcgtca 360 10 tataacagaa atcactatac taacagtaca attaattgtt gaatgtgcca aaggtctagg 420 gtaccgaget cgaatt 436 15 <210> 9 20 <211> 1797 <212> DNA <213> Myzus persidae 25 <220> 30 <221> CDS <222> (1)..(1797) 35 <400> 9 atg atg gac cag aaa tgt gac gtc ggc ggt ggt ggt gtc gct gcc 40 Met Met Asp Gln Lys Cys Asp Val Gly Gly Gly Val Ala Ala Ala 45 gcc gcc ggt atc ggt ggc ggt gtc ggc ggc ctc atg tcg tac aac Ala Ala Gly Ile Gly Gly Gly Val Gly Gly Leu Met Ser Tyx Asn 50 egt gge egt gge gge acc gag gte atc atc aaa eec egt agt eet gee 55 Arg Gly Arg Gly Gly Thr Glu Val Ile Ile Lys Pro Arg Ser Pro Ala 35 60 gtg gtg cag gtg gcc acc ggt ggc agt tac cac ggc ctg ecg gcg gcc 192 Val Val Gln Val Ala Thr Gly Gly Ser Tyr His Gly Leu Pro Ala Ala 65 50 55

tee gae gee gte ate gtg ege age eeg eea gge gge eae ttg eee ggg Ser Asp Ala Val Ile Val Arg Ser Pro Pro Gly Gly His Leu Pro Gly

ccg cag cag caa gtg ccg ccg tcc cgc aac ggc tgt tcc acc ctg ttt

- 23 -

Pro Gln Gln Gln Val Pro Pro Ser Arg Asn Gly Cys Ser Thr Leu Phe age gae ate get gge gte aag ega ete agg eee gae gat tgg ttg gee Ser Asp Ile Ala Gly Val Lys Arg Leu Arg Pro Asp Asp Trp Leu Ala gte aac teg eeg eec gee tet teg eec gge acg teg eac ata tee tac Val Asn Ser Pro Pro Ala Ser Ser Pro Gly Thr Ser His Ile Ser Tyr tac aac acg tot coa atg tog acc aac ago tac gac cog tac agt cog Tyr Asn Thr Ser Pro Met Ser Thr Asn Ser Tyr Asp Pro Tyr Ser Pro atg agt gga aaa atc gtc aaa gaa gag ttg tct ccg cca aac agc ctg Met Ser Gly Lys Ile Val Lys Glu Glu Leu Ser Pro Pro Asn Ser Leu teg gga gtc agc agc cat teg gat ggg ttg aag aag aaa etc aac Ser Gly Val Ser Ser His Ser Asp Gly Leu Lys Lys Lys Leu Asn cae acg dec teg ace ggt gte gte aac acc teg gda teg gge eee ggg His Thr Pro Ser Thr Gly Val Val Asn Thr Ser Ala Ser Gly Pro Gly ggt ggc gtt ggt ggc aat gtg ctg aac aac cga cct ccc gaa gag ctg Gly Gly Val Gly Gly Asn Val Leu Asn Asn Arg Pro Pro Glu Glu Leu tge etg gtg tgt gge gae egg teg tee ggt tae eat tae aac get ete Cys Leu Val Cys Gly Asp Arg Ser Ser Gly Tyr His Tyr Asn Ala Leu aca tgc gaa gga tgc aag ggg ttc ttc cgg agg agc atc acc aag aac Thr Cys Glu Gly Cys Lys Gly Phe Phe Arg Arg Ser Ile Thr Lys Asn ged gtg tad dag tgd aag tad ggd aad aat tgd gaa atd gad atg tad Ala Val Tyr Gln Cys Lys Tyr Gly Asn Asn Cys Glu Ile Asp Met Tyr

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10	aac	ato	200	cct	~	+	~++	at a	car	~~~	~					aaa	0.2.2
																	912
15	GLY		My	PLQ	GIU	Cys			Pro	GIA	ь		Cys	Ala	vai	Lys	
73		290					295					300					
20													cca				960
	Arg	Lys	Glu	Lys	Lys	Ala	Gln	Arg	Glu	Lys	qeA	Lys	Pro	Asn	Ser	Thr	
	305					310					315					320	
25																	
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30													Thr				
30					325				-	330					335	•	
35	att	gaa	tat	aat	ďàa	cca	ato	ata	ata	aa.	=-=	car	atg			~ t >	7.05
													Met				105
			-75	340			MCC	116		GIY	TILL	PIO	Mer		AUL	vai	
40				340					345					350			
					•												
AE													ctg				1104
45	BLO	Tyr		Lys	Pro	Leu	Ser	Ser	Glu	Gln	Lys	Glu	Leu	Ile	His	Arg	
			355					360					365				
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	ctt	gtc	tat	ttc	cag	gat	caa	tat	gaa	gct	cct	agt	gaa	aaa	gac	atg	1152
	Leu	Val	Tyr	Phe	Gln	Asp	Gln	Tyr	Glu	Ala	Pro	Ser	Glu	Lys	Asp	Met	
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00													Tyr				
	385	_				390					395		- , -			400	
65																700	
	aaa	caa	agt	gac	200	252	+ = +	cas	a+ a	~ . .			atg				
													Met				1248
70	-,,,		5 01	пор	405	4111	TYL	Arg	TIG		Thr	GIU	Mer	Thr		Leu	
					405					410					415		
75																	
75													cca				1296
	Thr	Val	Gln	Leu	Ile	Val	Glu	Phe	Ala	Lys	Arg	Leu	Pro	Gly	Phe	Asp	
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	aaa	ctt	gta	aga	gaa	gat	¢aa	atc	act	tta	ctc	aag	gct	tgc	tca	agt	1344
85													Ala				
			435					440				-	445	-			
00																	
90	gaa	gct	atq	atq	tte	ado	ata	aca	agg	ลอฮ	t = t	ge c	atc	9 ~~	act	a ==	770
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- 26 -

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10	Ala	Ala	GIÀ	50 Ife	GIĀ	GIÀ	GIA	GIA	25	СΤÅ	ĉтÀ	Leu	Met	Ser 30	Tyr	Asn
15	Arg	Gly	Arg 35	Gly	Gly	Thr	Glu	Val 40	Ile	Ile	Lys	Pro	Arg 45	Ser	Pro	Ala
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75	His	Thr	Pro 195	Ser	Thr	Gly	Val	Val 200	Asn	Thr	Ser	Ala	Ser 205	ĠĴУ	Pro	Gly
80	Gly	Gly 210	Val	Gly	Gly	Asn	Val 215	Leu	Asn	Asn	Arg	Pro 220	Pro	Glu	Glu	Leu
85	Сув 225	Leu	Val	Суз	Gly	Asp 230	Arg	Ser	Ser	Gly	Tyr 235	His	Tyr	Asn	Ala	Leu 240
90	Thr	Суз	Glu	Gly	Cys	Lys	Gļy	Phe	Phe	Arg	Arg	Ser	Ile	Thr	Lys	Asr

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245 250 255

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10 15	Met	Arg	A rg 275	Ly s	Cys	Gln	Glu	Cys 280	Arg	Leu	Lys	Lys	Cys 285	Leu	Thr	Val
20	Gly	Met 290	Arg	Pro	Glu	Cys	Val 295	val	Pro	Glu	Val	Gln 300	Сув	Ala	Val	Lys
25	Arg 305	Lys	Glu	Lys	Lys	Ala 310	Gln	Arg	Glu	Lys	Авр 315	Lys	Pro	Asn	Ser	Thr 320
3 <i>0</i>	Thr	qaA	Ile	Ser	Pro 325	Glu	Ile	Ile	Lys	Ile 330	Glu	Pro	Thr	Glų	Met 335	Lys
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40 45	Pro	Tyr	Val 355	Lys	Pro	Leu	Ser	Ser 360	Glu	Gln	Lys	Glu	Leu 365	Ile	His	Arg
50	Leu	Val 370	Tyr	Phe	Gln	Asp	Gln 375	Tyr	Glu	Ala	Pro	Ser 380	Glu	Lys	Asp	Met
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6 <i>0</i>	Lys	Gln	Ser	Asp	Thr 405	Thr	Туг	Arg	Ile	Ile 410	Thr	Glu	Met	Thr	Ile 415	Leu
65	Thr	Val	Gln	Leu 420	Ile	Val	Glu	Phe	Ala 425	Lys	Arg	Leu	Pro	Gly 430	Phe	Asp
70 75	Lys	Leu	Val 435	Arg	Glu	Asp	Gln	Ile 440	Thr	Leu	Leu	Lys	Ala 445	Cys	Ser	Ser
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90	Lys	Ala	Gly	Leu	Gly 485	Asp	Ala	Ilc	Glu	Asn 490	Gln	Leu	Ser	Phe	Ser 495	Arg

- 28 -

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10	Ala	Ile	Val 515	Ile	Phe	Ser	Ser	Arg 520	Pro	Asn	Leu	Leu	Asp 525	Gly	Trp	Lys	
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